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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/600,694	06/20/2003	Dae-Kwang Jung	5000-1-400	6714

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EXAMINER	
MALKOWSKI, KENNETH J	

ART UNIT	PAPER NUMBER
2613	

DATE MAILED: 07/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/600,694	JUNG ET AL.	
	Examiner	Art Unit	
	Kenneth J. Malkowski	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 June 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) _____ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1,4,7,10 and 11* is/are allowed.

6)☒ Claim(s) *2,3,5,6,8,9 and 12-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 June 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the central office further comprising an optical amplifier that amplifies the downstream signals output from the wavelength division multiplexer and the upstream data service signals input to the wavelength division multiplexer must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 2-3, 5-6, 8-9, and 13-14 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claims 2-3, 5-6, 8-9, and 13-14 state that the central office comprises an optical amplifier that amplifies downstream signals output from the wavelength division multiplexer and the upstream data service signals input to the wavelength division multiplexer. However, nowhere in the specification or in the drawings is there an optical amplifier that that amplifies downstream signals output from the wavelength division multiplexer and the upstream data service signals input to the wavelength division multiplexer contained within the central office.

Allowable Subject Matter

1. Claims 1, 4, 7 and 10-11 are allowed. The following is an examiner's statement of reasons for allowance:

2. With respect to independent claims 1, 4 and 7 the prior art does not fairly teach the limitation of a pumping optical source that outputs pumping optical signals that amplify the broadcasting optical signals output from the broadcasting optical source wherein a wavelength division multiplexer multiplexes inherently separate inputs such as the broadcasting optical signals output from the broadcasting optical source, the pumping optical signals output from the pumping optical source and the downstream optical signals output, such that the multiplexed signals are output, the wavelength division multiplexer filtering input upstream data service

signals, such that the filtered signals are output to the upstream optical receiver and in combination with all other limitations disclosed in independent claims 1 and 12.

With respect to independent claim 10, the prior art does not fairly teach a first wavelength division multiplexer that receives multiplexed signals including pumping optical signals from the central office, and divides downstream optical signals for downstream data service, broadcasting optical signals for broadcasting service and the pumping optical signals by de-multiplexing the multiplexed signals wherein an optical amplifier media receives the broadcasting optical signals and the pumping optical signals from the wavelength division multiplexer such that the broadcasting optical signals are amplified by the pumping optical signals and in combination with all other limitations disclosed in independent claims 1 and 12.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled " Comments on Statement of Reasons for Allowance."

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

4. Claims 12-14 are rejected under 35 U.S.C. 102(a) as being anticipated by "Bidirectional Passive Optical Network for the Transmission of WDM Channels with Digital Broadcast Video Signals," OFC, March 20, 2002 to Son et al.

With respect to claim 12, Son discloses a passive optical network system (title)(Figure 1 (wherein caption reads bidirectional WDM PON with digital broadcast)) comprising a central office (CO, Fig 1), a local office (RN, Fig 1), and a plurality of subscriber terminals (ONU, Fig 1), the subscriber terminals being connected to the local office through an optical fiber (3 Km optical fiber shown in Figure 1 between each ONU and the RN)), the central office and the local office being connected to each other (10 Km of SMF connecting the CO and the RN, Fig 1), the central office providing optical communication service to the subscriber terminals through the local office (Fig 1)(page 767 column 2 paragraph 1), the subscriber terminals (ONU, Fig 1) comprising: a wavelength division multiplexer that de-multiplexes multiplexed optical signals transmitted downstream from the local office (page 767 column 2 paragraph 1 (at a downstream data rate of 2,5Gbps the baseband and video signals are separated using a WDM coupler and sent to two independent receivers)), the wavelength division multiplexer multiplexing upstream data service signals for transmission from the subscriber terminals to the local office (page767 columns 2-3 paragraph 2 and paragraph 1 respectively (upstream signals were first coupled into the same fiber used by the downstream channels through the 1.3/1.5 μm WDM coupler and then sent to the local office (RN))); at least one downstream data optical receiver that receives the downstream optical signals divided by the wavelength division multiplexer, such that the received optical signals are converted into electric signals (page 767 column 2 paragraph 1 (baseband and video signals are separated using a WDM coupler and sent to two independent

receivers)); at least one broadcasting data optical receiver that receives the broadcasting optical signals divided by the wavelength division multiplexer, such that the received optical signals are converted into electric signals (PIN-FET shown in the second ONU unit in Figure 1); and an upstream optical source (LED shown in ONU in Figure 1) that generates upstream data service signals to be transmitted to the local office through the wavelength division multiplexer (page767 columns 2-3 paragraph 2 and paragraph 1 respectively (upstream signals were first coupled into the same fiber used by the downstream channels through the 1.3/1.5 μm WDM coupler and then sent to the local office (RN))).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over "Bidirectional Passive Optical Network for the Transmission of WDM Channels with Digital Broadcast Video Signals," OFC, March 20, 2002, pages 767-768 to Son et al. in view of "Spectrum-Sliced Bidirectional WDM PON," OFCC, March 2000, pages 160-162 to Jung et al.

With respect to claims 13-14, Son discloses the passive optical network system of claim 12 (title)(Figure 1 (wherein caption reads bidirectional WDM PON with digital broadcast)), wherein the central office (CO, Fig 1) further comprises an optical amplifier that amplifies the downstream broadcast signal (page 767 column 2 paragraph 1 (the downstream video signal was

amplified by an EDFA an multiplexed with the fifteen output from the wavelength division multiplexer). However, Son fails to disclose an EDFA that amplifies all of the downstream signals output from the central office. Jung, from the same field of endeavor discloses an EDFA pumped laser (page 160 paragraph 2 (EDFA was pumped with a pump laser)) that was used for all of the downstream signals (page 160 paragraph 3 (spectrum-sliced fiber amplifier light was used for downstream signals)). Therefore, it would have been obvious to one of ordinary skill in the art to implement the EDFA amplification used to amplify all downstream signals as taught by Jung in the optical transmission system as taught by Son. The motivation for doing so would have been to increase the transmission distance achieved by the downstream signals.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following patents are cited to further show the state of the art with respect to optical subscriber transmission systems in general:

U.S. Patent No. 5,742,414 is cited to show a multiplicity of services in a WDM router

U.S. Patent No. 6,577,422 is cited to show combined broadcast and data services in a WDM PON

U.S. Patent Application Publication No. 2004/0131357 is cited to show combined broadcast and data services in a WDM PON

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth J. Malkowski whose telephone number is (571) 272-5505. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Vanderpuye can be reached on (571) 272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KJM 7/19/06

KENNETH VANDERPUYE
SUPERVISORY PATENT EXAMINER